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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,483	03/12/2004	Yin S. Tang	M-15347 US	8401

7590

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EXAMINER
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BLEVINS, JERRY M

ART UNIT	PAPER NUMBER
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2883

DATE MAILED: 09/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/799,483

Applicant(s)

TANG, YIN S.

Examiner

Jerry Martin Blevins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

Claims 9 and 16 are objected to because of the following informalities:

Regarding claim 9, the claimed "heating" has no antecedent basis in the base claim 8. Examiner interprets claim 9 to depend from claim 6.

Regarding claim 16, the claimed "etching liquid" has no antecedent basis in the base claim 13. Examiner interprets claim 16 to depend from claim 15.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-7, 11, 13-17, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent to Yamane et al., number 5,459,803.

Regarding claim 1, Yamane teaches a method for manufacturing an optical fiber member comprising: modifying at least one end of an optical fiber member; and applying energy to the modified end of the optical fiber to form a lens surface (abstract and column 4, lines 10-22).

Regarding claim 3, Yamane teaches the limitations of the base claim 1. Yamane also teaches that the modifying comprises etching the at least one end of the optical fiber member by subjecting the at least one end of the optical fiber member to an etching liquid (abstract and column 4, lines 10-22).

Regarding claim 4, Yamane teaches the limitations of the base claim 3. Yamane also teaches that the etching liquid comprises HF acid (abstract and column 4, lines 10-22).

Regarding claim 5, Yamane teaches the limitations of the base claim 1. Yamane also teaches that the optical fiber member comprises glass (column 3, lines 55-64, column 4, lines 1-9, and column 5, lines 55-66).

Regarding claim 6, Yamane teaches the limitations of the base claim 1. Yamane also teaches that the applying energy to the modified end comprises heating the modified end to form the lens surface (abstract and column 4, lines 10-22).

Regarding claim 7, Yamane teaches the limitations of the base claim 6. Yamane also teaches that the lens surface comprises a convex lens surface (abstract and column 4, lines 10-22 and Figures 10 and 11).

Regarding claim 11, Yamane teaches the limitations of the base claim 1. Yamane also teaches that the applying energy comprises exposing the modified end to a heat source (abstract and column 4, lines 10-22).

Regarding claim 13, Yamane teaches a method for manufacturing a lensed tip optical fiber comprising: providing an optically transparent cylindrical fiber (column 3, lines 55-64, column 4, lines 1-9, and column 5, lines 55-66 teach a quartz-based glass

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fiber, which is intrinsically optically transparent, and Figures 8, 10, and 11 teach that the fiber is cylindrical); etching a first end of the optically transparent cylindrical fiber to form a tip; heating the tip to form a lens surface (abstract and column 4, lines 10-22).

Regarding claim 14, Yamane teaches the limitations of the base claim 13.

Yamane also teaches that the optically transparent cylindrical fiber comprises glass (column 3, lines 55-64, column 4, lines 1-9, and column 5, lines 55-66).

Regarding claim 15, Yamane teaches the limitations of the base claim 13.

Yamane also teaches that the etching comprises etching the optically transparent cylindrical fiber by subjecting the first end of the optically transparent cylindrical fiber to an etching liquid (abstract and column 4, lines 10-22).

Regarding claim 16, Yamane teaches the limitations of the examiner interpreted base claim 15. Yamane also teaches that the etching liquid comprises HF acid (abstract and column 4, lines 10-22).

Regarding claim 17, Yamane teaches the limitations of the base claim 13.

Yamane also teaches that the lens surface comprises a convex lens surface (abstract and column 4, lines 10-22 and Figures 10 and 11).

Regarding claim 20, Yamane teaches an optical fiber comprising: a first lens surface formed on a first end of an optically transparent cylindrical fiber (column 3, lines 55-64, column 4, lines 1-9, and column 5, lines 55-66 teach a quartz-based glass fiber, which is intrinsically optically transparent, and Figures 8, 10, and 11 teach that the fiber is cylindrical), the first lens surface formed by: modifying at least one end of the optically

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transparent cylindrical fiber; and applying energy to the modified end of the optically transparent cylindrical fiber (abstract and column 4, lines 10-22).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane in view of US Patent to Grasso, III et al., number 6,375,651.

Regarding claim 2, Yamane teaches the limitations of the base claim 1. Yamane does not teach that the modifying comprises removing material from the at least one end of the optical fiber member. Grasso teaches a method for manufacturing an optical fiber member comprising modifying at least one end of an optical fiber member, wherein the modifying comprises removing material from the at least one end of the optical fiber member (column 9, lines 3-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yamane with the teaching of Grasso. The motivation would have been to provide a more easily accessible method for the applying energy to the modified end of the optical fiber member (Grasso, column 9, lines 3-23).

Regarding claim 12, Yamane teaches the limitations of the base claim 1. Yamane does not teach that the applying energy comprises moving the modified end to a spark. Grasso teaches a method for manufacturing an optical fiber member

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comprising: modifying at least one end of an optical fiber member; and applying energy to the modified end of the optical fiber to form a lens surface (column 9, lines 3-23), wherein the applying energy comprises moving the modified end to a spark (column 6, lines 20-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yamane with the teaching of Grasso. The motivation would have been to expedite the formation of the lens by melting the fiber core (Yamane, abstract and column 4, lines 10-22).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane in view of Grasso and in view of US Pre Grant publication to Cesaroni et al., number 2003/0029040.

Regarding claim 8, Yamane teaches the limitations of the base claim 1. Yamane does not teach that the modifying comprises removing material from both ends of the optical fiber member. Grasso teaches a method for manufacturing an optical fiber member comprising modifying at least one end of an optical fiber member, wherein the modifying comprises removing material from the at least one end of the optical fiber member (column 9, lines 3-23). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yamane with the teaching of Grasso. The motivation would have been to provide a more easily accessible method for the applying energy to the modified end of the optical fiber member (Grasso, column 9, lines 3-23). Grasso does not teach removing material from both ends of the optical fiber member. Cesaroni teaches a fiber with lenses formed on both ends of the fiber. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify

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Yamane in view of Grasso to include lenses on both ends of the fiber, as taught by Cesaroni. This modification would necessitate that the step of removing material, taught by Grasso, be repeated on both ends of the optical fiber member. The motivation would have been to improve collimation and focusing of light entering and exiting the optical fiber member.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane.

Regarding claim 10, Yamane teaches the limitations of the base claim 1. Yamane also teaches that the modified end has a first length, and that the applying energy comprises applying energy along the first length to form the lens at a position on the modified end having an angle (column 11, lines 24-29 and column 11, line 64 – column 12, line 2). Yamane does not teach an angle of between about 15 degrees to about 20 degrees. It would have been obvious to one of ordinary skill in the art at the time of the invention to have an angle of between about 15 degrees to about 20 degrees, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. The motivation would have been to improve the coupling efficiency of the fiber.

Claims 9, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane in view of Cesaroni.

Regarding claim 9, Yamane teaches the limitations of the examiner interpreted base claim 6. Yamane also teaches that the heating comprises heating the first end to



form a lens on the first end (abstract and column 4, lines 10-22). Yamane does not teach that the heating comprises heating both the first end and the second end to form a lens on each end. Cesaroni teaches a fiber with lenses formed on both ends of the fiber. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yamane to include lenses on both sides of the fiber, as taught by Cesaroni. This modification would necessitate that the step of heating, taught by Yamane, be repeated on both ends. The motivation would have been to improve collimation and focusing of light entering and exiting the optical fiber member.

Regarding claim 18, Yamane teaches the limitations of the base claim 13. Yamane also teaches that the etching comprises etching the first end of the optically transparent cylindrical fiber (abstract and column 4, lines 10-22). Yamane does not teach that the etching comprises etching both the first end and the second end of the optically transparent cylindrical fiber. Cesaroni teaches a fiber with lenses formed on both ends of the fiber. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yamane to include lenses on both sides of the fiber, as taught by Cesaroni. This modification would necessitate that the step of etching, taught by Yamane, be repeated on both ends. The motivation would have been to improve collimation and focusing of light entering and exiting the optical fiber member.

Regarding claim 19, Yamane teaches the limitations of the base claim 18. Yamane also teaches that the heating comprises heating the first end to form a lens on the first end (abstract and column 4, lines 10-22). Yamane does not teach that the heating comprises heating both the first end and the second end to form a lens on each

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end. Cesaroni teaches a fiber with lenses formed on both ends of the fiber. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yamane to include lenses on both sides of the fiber, as taught by Cesaroni. This modification would necessitate that the step of heating, taught by Yamane, be repeated on both ends. The motivation would have been to improve collimation and focusing of light entering and exiting the optical fiber member.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB



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